

In the claims:

Please amend the claims as follows:

1. (Amended) An isolated nucleic acid molecule encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 comprising a contiguous nucleotide sequence [derived from at least one] which is an alternative splice form of a transcript of a B7-1 or B7-2 T cell costimulatory molecule gene, the nucleotide sequence being a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and being represented by a formula A-B-C-D-E, wherein

(B1)
A comprises a nucleotide sequence of at least one first exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one first exon encodes a B7-1 or B7-2 signal peptide domain,

B comprises a nucleotide sequence of at least one second exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one second exon encodes an B7-1 or B7-2 immunoglobulin variable region-like domain,

C comprises a nucleotide sequence of at least one third exon of a T B7-1 or B7-2 cell costimulatory molecule gene, wherein the at least one third exon encodes an B7-1 or B7-2 immunoglobulin constant region-like domain,

D comprises a nucleotide sequence of at least one fourth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fourth exon encodes a B7-1 or B7-2 transmembrane domain, and

E comprises a nucleotide sequence of at least one fifth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fifth exon encodes a B7-1 or B7-2 cytoplasmic domain,

Sub C1
with the proviso that E is not the nucleic acid sequence shown in [any of the following nucleotide sequences selected from a group consisting of] SEQ ID NO:25, E is not the nucleic acid sequence shown in SEQ ID NO:27, E is not the nucleic acid sequence shown in SEQ ID NO:29 and E is not the nucleic acid sequence shown in SEQ ID NO:31.

2. (Amended) The isolated nucleic acid molecule of claim 1 which is a cDNA.

(B2)

3. (Amended) The isolated nucleic acid molecule of claim 2 which comprises a coding region of the cDNA.

4. (Amended) The isolated nucleic acid molecule of claim 1, wherein the nucleotide sequence is derived from a T cell costimulatory molecule gene encoding B7-1.

5. (Amended) The isolated nucleic acid molecule of claim 4, wherein B7-1 is murine.

6. (Amended) The isolated nucleic acid molecule of claim 4, wherein B7-1 is human.

7. (Amended) The isolated nucleic acid molecule of claim 5, wherein E comprises a nucleotide sequence shown in SEQ ID NO:4.

8. (Amended) The isolated nucleic acid molecule of claim 5, wherein E comprises a nucleotide sequence encoding an amino acid sequence shown in SEQ ID NO:5.

9. (Amended) An isolated nucleic acid encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 and which is an alternative splice form of a transcript of the a B7-1 or B7-2 [is encoded by a] T cell costimulatory molecule gene having at least one first exon encoding a B7-1 or B7-2 first cytoplasmic domain comprising a nucleotide sequence selected from the group consisting of: a nucleotide sequence of SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:29 and SEQ ID NO:31, and at least one second exon encoding a B7-1 or B7-2 second cytoplasmic domain, wherein the isolated nucleic acid comprises a nucleotide sequence encoding the B7-1 or B7-2 second cytoplasmic domain and said nucleic acid molecule being a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22.

10. (Amended) The isolated nucleic acid molecule of claim 9 which comprises a coding region of a cDNA.

11. (Amended) The isolated nucleic acid molecule of claim 9 which does not comprise a nucleotide sequence encoding the first cytoplasmic domain.

12. (Amended) The isolated nucleic acid molecule of claim 9 wherein the T cell costimulatory molecule gene is B7-1.

13. (Amended) The isolated nucleic acid molecule of claim 12 wherein B7-1 is murine.

14. (Amended) The isolated nucleic acid molecule of claim 12 wherein B7-1 is human.

15. (Amended) An isolated nucleic acid molecule which is a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 comprising a nucleotide sequence shown in SEQ ID NO:1.

16. (Amended) An isolated nucleic acid molecule which is a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 comprising a nucleotide sequence shown in SEQ ID NO:3.

17. (Amended) An isolated nucleic acid molecule which is a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and encoding a cytoplasmic domain derived from a B7-1 or B7-2 protein which binds CD28 or CTLA4, the nucleic acid comprising a nucleotide sequence shown in SEQ ID NO:4.

33. (Amended) An isolated nucleic acid molecule encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 comprising a contiguous nucleotide sequence which is an alternative splice form of a transcript of a B7-1 or B7-2 [derived from at least one] T cell costimulatory molecule gene, the nucleotide sequence being a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 represented by a formula A-B-C-D-E, wherein

A comprises a nucleotide sequence of at least one first exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one first exon encodes a B7-1 or B7-2 signal peptide domain,

B comprises a nucleotide sequence of at least one second exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one second exon encodes a B7-1 or B7-2 immunoglobulin variable region-like domain,

C comprises a nucleotide sequence of at least one third exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one third exon encodes a B7-1 or B7-2 immunoglobulin constant region-like domain,

D, which may or may not be present, comprises a nucleotide sequence of at least one fourth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fourth exon encodes a B7-1 or B7-2 transmembrane domain, and

E, which may or may not be present, comprises a nucleotide sequence of at least one fifth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fifth exon encodes a B7-1 or B7-2 cytoplasmic domain,

with the proviso that A is not [any of the following nucleotide sequences selected from a group consisting of] the nucleic acid sequence shown in SEQ ID NO:33, A is not the nucleic acid sequence shown in SEQ ID NO:35, A is not the nucleic acid sequence shown in SEQ ID NO:37, A is not the nucleic acid sequence shown in SEQ ID NO:39 and A is not the nucleic acid sequence shown in SEQ ID NO:41.

4B4
34. (Amended) The isolated nucleic acid molecule of claim 33 which is a cDNA.

35. (Amended) The isolated nucleic acid molecule of claim 34 which comprises a coding region of the cDNA.

36. (Amended) The isolated nucleic acid molecule of claim 33, wherein the nucleotide sequence is derived from a T cell costimulatory molecule gene encoding B7-2.

37. (Amended) The isolated nucleic acid molecule of claim 36, wherein B7-2 is murine.

38. (Amended) The isolated nucleic acid molecule of claim 36, wherein B7-2 is human.

39. (Amended) The isolated nucleic acid molecule of claim 37, wherein A comprises a nucleotide sequence shown in SEQ ID NO:14.

40. (Amended) An isolated nucleic acid molecule which is a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 and which is an alternative splice form of a transcript of a B7-1 or B7-2 [is encoded by a] T cell costimulatory molecule gene having

JB4
at least one first exon encoding a B7-1 or B7-2 first signal peptide domain comprising a nucleotide sequence selected from the group consisting of a nucleotide sequence of SEQ ID NO:33, SEQ ID NO:35, SEQ ID NO:37 SEQ ID NO:39 and SEQ ID NO:41, and

at least one second exon encoding a B7-1 or B7-2 second signal peptide domain, wherein the isolated nucleic acid comprises a nucleotide sequence encoding the second signal peptide domain.

41. (Amended) The isolated nucleic acid molecule of claim 40 which comprises a coding region of a cDNA.

JB5
42. (Amended) An isolated nucleic acid molecule which is a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and which encodes a B7-1 or B7-2 protein which binds to CD28 or CTLA4, wherein said nucleic acid molecule comprises a nucleotide sequence shown in SEQ ID NOs: 4 and 14.

JB6
43. (Amended) The isolated nucleic acid molecule of claim 40 wherein the T cell costimulatory molecule gene is B7-2.

44. (Amended) The isolated nucleic acid molecule of claim 43 wherein B7-2 is murine.

45. (Amended) The isolated nucleic acid molecule of claim 43 wherein B7-2 is human.

46. (Amended) An isolated nucleic acid molecule encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 comprising a nucleotide sequence shown in SEQ ID NO:12.

47. (Amended) An isolated nucleic acid molecule encoding a signal peptide domain derived from a B7-1 or B7-2 protein which binds CD28 or CTLA4, the nucleic acid comprising a nucleotide sequence shown in SEQ ID NO:14.

63. (Amended) An isolated nucleic acid molecule encoding a B7-1 or B7-2 protein comprising a contiguous nucleotide sequence derived from at least one B7-1 or B7-2 T cell costimulatory molecule gene, the nucleotide sequence being a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and being represented by a formula A-B-C-D, wherein

A comprises a nucleotide sequence of at least one first exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one first exon encodes a signal peptide domain,

B comprises a nucleotide sequence of at least one second exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one second exon encodes an immunoglobulin constant region-like domain,

C comprises a nucleotide sequence of at least one third exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one third exon encodes a transmembrane domain, and

D comprises a nucleotide sequence of at least one fourth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fourth exon encodes a cytoplasmic domain.

64. (Amended) The isolated nucleic acid molecule of claim 63 comprising a nucleotide sequence shown in SEQ ID NO:8.

65. (Amended) The isolated nucleic acid molecule of claim 63 comprising a nucleotide sequence shown in SEQ ID NO:10.

69. (Amended) An isolated nucleic acid molecule which is a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and encoding a B7-1 or B7-2 protein comprising a contiguous nucleotide sequence derived from at least one B7-1 or B7-2 T cell costimulatory molecule gene, the nucleotide sequence represented by a formula A-B-C-D, wherein

A comprises a nucleotide sequence of at least one first exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one first exon encodes a signal peptide domain,

B comprises a nucleotide sequence of at least one second exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one second exon encodes an immunoglobulin variable region-like domain,

C comprises a nucleotide sequence of at least one third exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one third exon encodes a transmembrane domain, and

D comprises a nucleotide sequence of at least one fourth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fourth exon encodes a cytoplasmic domain.

70. (Amended) The isolated nucleic acid molecule of claim 69 comprising a nucleotide sequence shown in SEQ ID NO:62.

71. (Amended) The isolated nucleic acid molecule of claim 69 comprising a nucleotide sequence shown in SEQ ID NO:64.

77. (Amended) An isolated nucleic acid molecule encoding a B7-1 or B7-2 protein which binds CD28 or CTLA4 comprising a contiguous nucleotide sequence which is an alternative splice form of a transcript of a B7-1 or B7-2 [derived from at least one] T cell costimulatory molecule gene, the nucleotide sequence being a naturally occurring variant of the nucleotide sequence shown in SEQ ID NO:18 or SEQ ID NO:22 and being represented by a formula A-B-C-D-E, wherein:

A comprises a nucleotide sequence of at least one first exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one first exon encodes a B7-1 or B7-2 signal peptide domain,

B comprises a nucleotide sequence of at least one second exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one second exon encodes a B7-1 or B7-2 immunoglobulin variable region-like domain,

C comprises a nucleotide sequence of at least one third exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one third exon encodes a B7-1 or B7-2 immunoglobulin constant region-like domain,

D comprises a nucleotide sequence of at least one fourth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fourth exon encodes a B7-1 or B7-2 transmembrane domain, and

E comprises a nucleotide sequence of at least one fifth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fifth exon encodes a B7-1 or B7-2 cytoplasmic domain,

CB
with the proviso that E is not [any of the following nucleotide sequences selected from a group consisting of] the nucleic acid sequence shown in SEQ ID NO:25, E is not the nucleic acid sequence shown in SEQ ID NO:27, E is not the nucleic acid sequence shown in SEQ ID NO:29 and E is not the nucleic acid sequence shown in SEQ ID NO:31; or wherein

A comprises a nucleotide sequence of at least one first exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one first exon encodes a B7-1 or B7-2 signal peptide domain,

B comprises a nucleotide sequence of at least one second exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one second exon encodes a B7-1 or B7-2 immunoglobulin variable region-like domain,

C comprises a nucleotide sequence of at least one third exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one third exon encodes a B7-1 or B7-2 immunoglobulin constant region-like domain,

D, which may or may not be present, comprises a nucleotide sequence of at least one fourth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fourth exon encodes a B7-1 or B7-2 transmembrane domain, and

E, which may or may not be present, comprises a nucleotide sequence of at least one fifth exon of a B7-1 or B7-2 T cell costimulatory molecule gene, wherein the at least one fifth exon encodes a B7-1 or B7-2 cytoplasmic domain,